A CASE STUDY OF THE UNITED STATES MILITARY'S RESPONSE TO THE 2014 EBOLA EPIDEMIC

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by

DANIEL C. WIGGINS, MAJOR, US ARMY
B.S.-Biology, Southeast Missouri State University, Cape Girardeau, Missouri, 2001

Fort Leavenworth, Kansas
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THESIS APPROVAL PAGE

Name of Candidate: Major Daniel C. Wiggins

Thesis Title: A Case Study of the United States Military's Response to the 2014 Ebola Epidemic

Approved by:

_____, Thesis Committee Chair
Michael A. Wooten, M.A.

_____, Member
COL Rodney L. Coldren, M.D.

_____, Member
Philip W. Wyssling, M.B.A.

Accepted this 10th day of June 2016 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

A CASE STUDY OF THE UNITED STATES MILITARY'S RESPONSE TO THE 2014 EBOLA EPIDEMIC, Major Daniel C. Wiggins, 85 pages.

The complexity and critical importance of the United States (US) Military's response to the 2014 Ebola epidemic in Western Africa provides a unique case study platform for operational analysis as well as providing an opportunity to assess the US Military's capabilities to provide humanitarian assistance and disaster relief during an emerging infectious disease epidemic. It also provides an exceptional opportunity to study the interactions of inter-governmental agencies, Joint Force procedures in a non-traditional setting, and non-governmental organization (NGO) cooperation. The purpose of this study is to examine the US Military's response to the 2014 Ebola outbreak in West Africa. This study will primarily focus on the US Military's response in conjunction with other Governmental Organizations and NGOs. A case study of the 2014 Ebola outbreak provides a unique perspective on how the military integrates with non-military organizations through combined lines of effort in order to respond to and contain the Ebola outbreak.

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ACRONYMS

1st AML	1st Area Medical Laboratory
AFRICOM	Forces Africa Command
APAN	All Partners Access Network
ASCC	Army Service Component Command
CALL	Center for Army Lessons Learned
CENTCOM	Central Command
CMOC	Civil-Military Operations Center
DOD	Department of Defense
DOS	Department of State
DOTMLPF	Doctrine, Organization, Training, Materiel, Leadership and education, Personnel, and Facilities
ESC	Expeditionary Sustainment Command
JFC-UA	Joint Forces Command United Assistance
LNO	Liaison Officers
NGO	Non-governmental Organizations
TSC	Theater Sustainment Command
UN	United Nations
US	United States
USAFRICOM	United States Forces Africa Command
USAID	United States Agency for International Development
USARAF	United States Army Africa
USG	United States Government

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CHAPTER 1

INTRODUCTION

> The threat of contagious disease transcends political boundaries, and the ability to prevent, quickly detect and contain outbreaks with pandemic potential has never been so important. An epidemic that begins in a single community can quickly evolve into a multinational health crisis that causes millions to suffer, as well as spark major disruptions to travel and trade. Addressing these transnational risks requires advance preparation, extensive collaboration with the global community, and the development of a resilient population at home.[1]
>
> — US President Barrack Obama,
> *National Security Strategy, 2010*

Background

In 2014 the US Military responded to the Ebola crisis in West Africa. The United States (US) Military has an emerging infectious disease detection, surveillance, and response network set up in East Africa, Georgia, Egypt, Cambodia, and Thailand in conjunction with research units stationed at each site. Each of these units work closely with the US Government's Center for Disease Control, the US Department of State (DOS), and Host Nation governments and organizations. However, during the Ebola crisis of 2014, the US combined response met organizational, governmental, technical, and logistical challenges that impacted the US Military's response.

According to the President of the United States, the 2014 Ebola epidemic in West Africa along with the humanitarian crisis it presented were top national security priorities for the US.[2] US governmental agencies partnered with the United Nations, the World Health Organization, international agencies, and local governments to respond to the epidemic as a counter-measure to defend against the spread of the disease. The focus of the effort was to contain the Ebola epidemic to West Africa; minimize the economic,

social, and political impact; improve and leverage global cooperation and partnership; and strengthen the security of the region through healthcare related operations.

In March of 2014, the US Government (USG) initiated planning processes for a response to the Ebola epidemic. In September of 2014, the US Military and uniformed services capabilities were leveraged to assist in controlling the epidemic. The US Military's expertise in command and control, logistics support, training, and engineering operations played key roles in the containment of the epidemic. Additionally in September of 2014, the United Nations Security Council identified the Ebola epidemic as a "threat to international peace and security," resulting in the first humanitarian Security Council Resolution in history that was unanimously adopted as a public health emergency mission.[3]

Efforts to combat the disease were assigned to various elements of the uniformed services. US Forces Africa Command (USAFRICOM) was assigned to set up a Joint Forces Command post in Liberia to provide command and control capabilities for the joint effort and an intermediate staging base to provide operational support. Military engineers were tasked to build Ebola treatment facilities in affected geographic regions and improve local infrastructure to support health care operations. US governmental agencies assisted with the recruitment and organization of medical personnel to meet the Joint Force mission requirements and staffing short-falls. The military Joint Forces Command was also tasked with establishing a training site that could train 500 health care providers each week to promote the safety of health care providers as well as patients receiving direct medical care. The US Public Health Service Commissioned Corps deployed over 65 officers to Liberia in support of the Department of Defense's

(DOD) healthcare mission. US Military personnel worked DOS, intra-governmental agencies, Center for Disease Control, World Health Organization, Host Nation, international governmental organization, and non-governmental organization (NGO) staff members to ensure operational requirements were met.

Purpose

The purpose of this study is to examine the detection of, surveillance of, and response to the 2014 Ebola outbreak in West Africa. This study will primarily focus on the US Military's response in conjunction with other governmental organizations and NGOs. A case study of the 2014 Ebola outbreak provides a unique perspective on how the military integrates with non-military organizations through combined lines of effort in order to respond to and contain the 2014 Ebola outbreak in West Africa.

Issues

The issues with using the 2014 Ebola outbreak to examine the detection, surveillance, and response of the US Military are complex. The outbreak is recent and primary references that specifically address the issues are limited. Firsthand account by Service Members who participated in the operation can provide a perspective that is not often portrayed in professional scientific references. Additionally, the response to the epidemic was a multi-national and multi-organizational effort. Primary resources from non-governmental agencies are limited. To further complicate the matter, non-military/civilian resources often focus on technical, scientific, or social impacts of the response and often do not discuss the operational, sustainment or logistical requirements of broad humanitarian relief efforts. In general, few professional or civilian sector

primary references address the military's challenges while supporting relief efforts in West Africa, the geo-political environment associated with multi-national efforts, or the impact that precipitates from foreign relief efforts operating in an area that is unstable with limited security and logistical assets.

Primary Problem and Research Questions

The primary problem for the relief effort was containing the spread of the Ebola virus in order to stop the Ebola virus disease outbreak. Additional problems include the medical treatment of infected individuals, the role of the US Military on foreign soil in the humanitarian response, the safety and well-being of the US Military members deployed to the area, and the capitalization of efforts to sustain gains made in detecting, monitoring, and responding to future outbreaks. Response time to the outbreak was also a problem; it takes time to mobilize the military and medical assets required to respond to such an epidemic.

The primary research question of this paper is, "What where the challenges and lessons learned from the US Military's response during the 2014 Ebola epidemic?" The intent of the research project is to analyze the epidemic relief efforts and define lessons learned from the military operation in support of the relief and containment efforts. Secondary research questions include:

1. What were some of the issues for the US Military while working in a multi-national—multi-organizational relief effort,

2. What would better prepare US Military units to participate in complex humanitarian relief efforts, and

3. Recommendations for improvements of the military's response during humanitarian assistance or disaster relief efforts.

Assumptions and Limitations

It is assumed that the US Military will be involved in future humanitarian relief efforts. It is also assumed that past US Military humanitarian relief efforts can be used as predictors when considering the suitability and feasibility of future operations. The possibility of another Ebola outbreak (or another infectious disease such as Marburg Hemorrhagic Fever or the Zika Virus) on some scale is likely and lessons learned during the 2014 Ebola outbreak will be useful when responding to the next outbreak. It can be considered true that collective efforts by military and civil organizations should be anticipated during future environmental or humanitarian emergencies.

It should be noted that there are several limitations to the scope of this research project. Primary resources for the 2014 Ebola epidemic are limited since the event occurred so recently. However, there are several World Health Organization reports, Center for Disease Control reports, Army documents, and State Department documents that are available for research. It should also be noted that as the researcher I do not have firsthand experience of the Ebola response effort; I am limited to individual historical accounts of participants of the operation as well as published official documents. Original media reports are used to assess the timeline and public awareness as well as the public's perception of the military's role in the world wide response to the Ebola epidemic in 2014.

Emphasis and Significance

The emphasis of this research project is the US Military's role in relief efforts in conjunction with other government and civilian organizations. This study will assess the feasibility and suitability of military assets in a global response to an infectious disease epidemic. It will also consider the military's role in disease detection and surveillance. The identification of capabilities and the definition of the military's role during an epidemic that threatens national security are paramount. This research project will not assess the validity or justification of using US Military forces during the 2014 Ebola outbreak. It will study the challenges that the US Military faced while responding to the 2014 Ebola outbreak in West Africa.

The significance of this study is the provision of lessons learned and recommendations for the US Military's participation in future inter-agency humanitarian relief operations. A detailed analysis of the 2014 Ebola epidemic presents potential improvements to US Military medical humanitarian relief operations; addresses increased capabilities in infectious disease detection, surveillance and response; and provides consideration of recommendations that may lead to better inter-agency cooperation during relief efforts. Lessons learned from the 2014 Ebola crisis can be beneficial for future military leaders as they incorporate military art and science into an operation that supports civilian led relief projects.

The complexity and critical importance of the US Army's response to the 2014 Ebola epidemic in Western Africa provides a unique case study platform for operational analysis as well as providing an opportunity to assess the Army's capabilities for detection, response, and surveillance of emerging infectious diseases. It also provides an

exceptional opportunity to study the interactions of inter-governmental agencies, Joint Force procedures in a non-traditional setting, and NGO cooperation.

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[1] Barack H. Obama, *National Security Strategy* (Washington, DC: The White House, 2015), 48-49.

[2] The White House, Office of the Press Secretary, *Fact Sheet: US Response to the Ebola Epidemic in West Africa* (Washington, DC: Government Printing Office, September 16, 2014).

[3] United Nations Security Council, Resolution 2177 (2014), September 18, 2014.

CHAPTER 2

LITERATURE REVIEW

Introduction

A literature review was used to research the primary research question, "What were the biggest challenges to the US Military during the 2014 Ebola epidemic response?" The literature review will provide a framework to explore the primary research question with the intent to assess the US Military's capabilities and response to the Ebola epidemic, identify issues related to a multi-organizational response, discuss areas for improvement, and develop recommendations to better prepare for the next humanitarian relief effort that the US Military will face. The information gathered through the literature review will be analyzed in chapter 4: Analysis.

The Epidemic

The 2014 Ebola epidemic in West Africa was the most widespread outbreak of the Ebola virus to date. It is estimated that the epidemic actually began in 2013 ending in 2015, although future flare-ups are expected. According to the World Health Organization, the outbreak began in Guinea in December 2013.[1] From Guinea, the disease spread to Liberia and Sierra Leone with small outbreaks in Nigeria and Mali along with isolated cases in Senegal, the United Kingdom, and Sardinia. Secondary infection cases of healthcare workers were also reported in the US and Spain. In the early stages of the epidemic, fatality rates were 70 percent for infected individuals who were not hospitalized[2] and 57 to 59 percent for those who were hospitalized.[3]

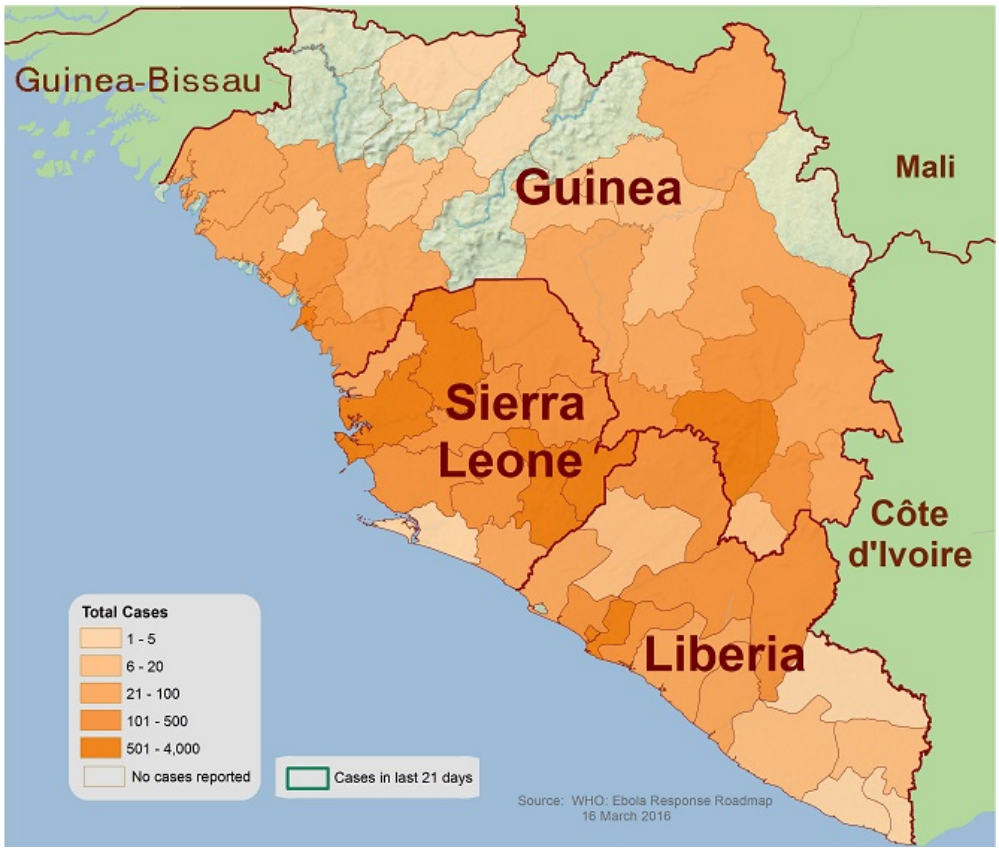

Figure 1. CDC Classification of Countries with Reported Ebola Cases as of March 16, 2016

Source: Center for Disease Control and Prevention, "2014 Ebola Outbreak in West Africa –Outbreak Distribution Map," accessed March 16, 2016, http://www.cdc.gov/vhf/Ebola/outbreaks/2014-west-africa/distribution-map.html.

The 2014 Ebola virus pandemic that began in West Africa spread to 10 nations. Documented cases spread from West Africa to Europe and to the US. As of March 27, 2016, there were 28,646 confirmed, probable, and suspected Ebola virus disease cases worldwide. Of these cases 11,323 resulted in death.[4] Many experts suggest that the magnitude of the epidemic was larger than the documented cases.

In September 2014, the United Nations Security Council declared that the Ebola virus epidemic in West Africa was "a threat to international peace" and unanimously

adopted a resolution urging United Nations (UN) member states to provide more resources to fight the outbreak. The United Nations Security Council expressed "grave concern about the outbreak of the Ebola virus in, and its impact on West Africa, in particular Liberia, Guinea and Sierra Leone, as well as Nigeria and beyond."[5] The World Health Organization and the United Nations Mission for Ebola Emergency Response had the ultimate goal of 100 percent isolation of Ebola cases as well as a 100 percent compliance of safe burial practices of Ebola victims.[6]

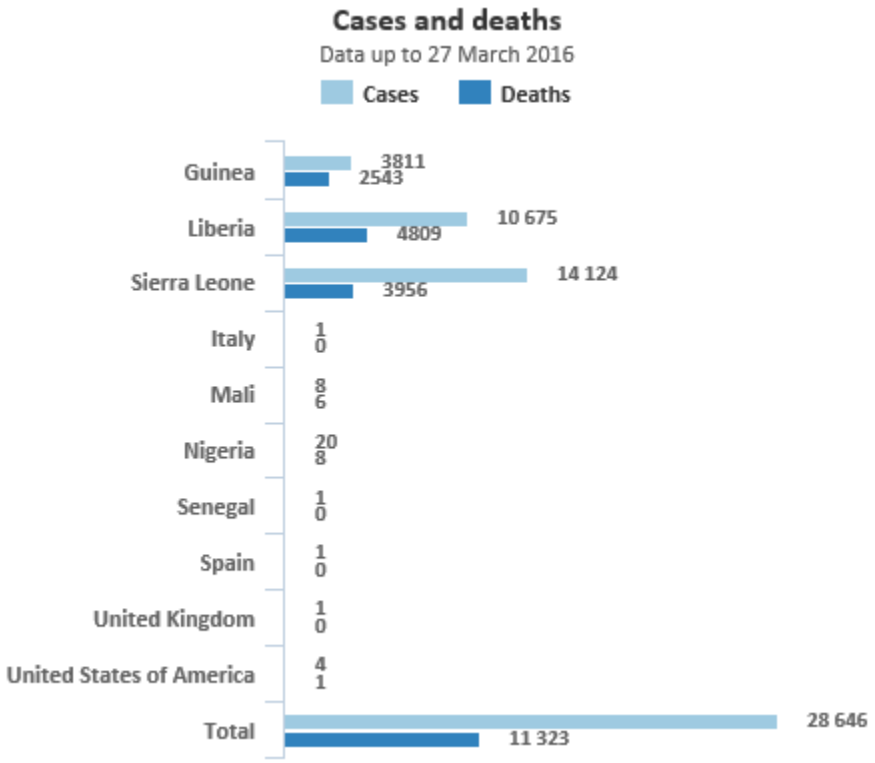

Figure 2. Confirmed, Probable, and Suspected Ebola Virus Disease Cases Worldwide as of March 27, 2016.

Source: World Health Organization, "Ebola Situation Report–March 30, 2016," accessed March 30, 2016, http://apps.who.int/Ebola/current-situation/Ebola-situation-report-30-march-2016.

Disease Background

The pathogenic process of the Ebola virus disease posed challenges for infectious disease management and preventive medicine measures of the combined effort. The Ebola virus infects an individual (the host) through their mucous membranes, skin lesions, or other infectious methods outside the digestive track (e.g. intravenous or intramuscular introduction). The virus can affect a multitude of cell lines within the body and it triggers a cellular response that causes the host cells to replicate the virus; resulting in the spread of the virus to other parts of the body. The incubation period, time from infection to development of disease, can be as short as six to ten days after infection. The virus typically spreads through the lymphatic system. The spread of the infection causes a response that results in an unbalanced shift in the coagulation cascade, causing the loss of blood clotting factor regulation and decreased protein synthesis of infected tissue. The pathogenic end result is vascular break down, multi-organ failure, and systemic shock. The 2014 Ebola epidemic spread throughout Western Africa at an alarming rate.

The Ebola virus is a *filovirus*. A *filovirus* infection can cause severe hemorrhagic fever in humans as well as nonhuman primates. There are currently only two viruses identified as *filoviruses*, the Ebola virus and the Marburg virus. The Ebola virus is categorized into four types: the Ivory Coast, Sudan, Zaire, and Reston species. The Ebola –Reston species is the only known *filovirus* that does not cause severe disease in humans; however, it can be fatal in monkeys.[7]

The first documented human Ebola hemorrhagic fever cases were in 1976 in the Democratic Republic of Congo (then known as Zaire) and Southern Sudan. The two different Ebola species isolated from those cases were named after the countries in which

they were first identified (Zaire and Sudan). The Zaire species outbreak had a 90 percent mortality rate and the Sudan species had a 50 percent mortality rate. The Ebola virus has sporadically appeared in Africa since the original cases in 1976. Significant outbreaks were reported in Kikwit, Zaire in 1995 and in Gulu, Uganda in 2000. The Ebola virus strains, along with the *filovirus* Marburg, pose significant public health threats.

Bats play a major role in the replication, transmission, and evolution of the Ebola virus and Marburg virus. There are numerous studies where anti-bodies for both the Ebola virus and Marburg virus were found in bats. In 1996, one study showed that bats infected with the *filoviruses* survive even while the Ebola virus replicates in their system resulting in viral shed.[8] Several other studies have shown that multiple African bat species, specifically fruit bats, can act as reservoirs for the Ebola virus.[9] There is concern among scientific researchers that the *filovirus* in the African bat population may spread to other bat populations around the world.

Historical Perspective-Comparison and Contrast of Viral Epidemics

United States Service Members deploying during World War I or returning from overseas during 1918 posed unique concerns for the spread of disease, which were in some ways similar to individuals returning from the 2014 Ebola epidemic response effort. Throughout history, the deployment of military forces has set environmental conditions that facilitated the spread of disease, which at times resulted in epidemics. One example is the Spartan Wars of 430–427 BC in which dislocated Greeks found refuge in Athens. The living conditions in Athens were conducive to the spread of disease resulting in an epidemic that affected nearly half the population of Athens.[10] Some scholars have even

suggested that the collapse of the Roman Empire may be linked to the spread of plague by Roman soldiers returning home from battle in the Persian Gulf around 165 AD.[11] Similarly, some American Service Members returning back to the US from World War I were exposed to "Spanish" influenza during their time overseas. There was prudent concern that some US Service Members may be exposed to the Ebola virus while deployed to West Africa.

The 1918 Spanish influenza virus epidemic was one of the most deadly epidemics in history and has certain parallels to the 2014 Ebola epidemic. It is estimated that 20 to 40 million people died worldwide from the Spanish influenza pandemic.[12] However, some scholars believe that the estimates should be increased to as many as 50 to 100 million people.[13] It is thought that the living conditions in Europe during World War I facilitated the spread of the disease. Soldiers living under harsh conditions with stress, poor hygiene, and sub-standard nutrition led to the spread of the disease among the fighting forces. The disease continued to spread through the populace of Western Europe at staggering rates. It has been speculated that the pandemic killed more people than the Black Death (a plague-like disease caused by the *Yersinia pestis* bacteria). The spread of Spanish Influenza has been sometimes called "the greatest medical holocaust in history."[14] There was significant concern as to how rapidly the Ebola virus disease spread during the 2014 outbreak and whether or not the epidemic could be contained.

In the US, estimates suggest that 28 percent of citizens were infected by Spanish influenza with roughly 675,000 Americans dying from the disease.[15] This particular strain of influenza was especially virulent. Typically, influenza is most deadly to the very young or elderly populations as well as immune system compromised or immune in-

sufficient individuals; which is comparatively similar to the Ebola virus mortality scenario. With typical influenza strains, some members of the population may be infected and only have minor symptoms; and it is even possible that some individuals may be infected with no symptoms at all. Influenza usually is not deadly for healthy individuals. The Spanish influenza strain was infecting healthy young individuals with deadly consequences; however, it was not actually the influenza virus that killed so many young healthy individuals. More than half the deaths in the US attributed to Spanish influenza were due to secondary bacterial infections of the airway resulting in pneumonia affecting a population that normally did not succumb to the disease.[16] In 2008, Dr John F. Brundage (physician–epidemiologist at the Armed Forces Health Surveillance Center) and Dr G. Dennis Shanks (director of the Australian Army Malaria Institute) presented a hypothesis that the 1918 influenza strain had such a high mortality rate due to genetic mutations that enabled the virus to destabilize the individual's airway and lungs. This in turn decreased their ability to clear their bronchial system, leading to bacterial pneumonia.[17] There initially was concern that the 2014 Ebola epidemic may have been the result of a new, more virulent strain of the virus.

Some scholars argue that more World War I military Service Members died from the 1918 Spanish influenza pandemic than died from combat. Dr Carol Byerly, a historian who specializes in American political history and the history of military medicine, outlines the impact of the 1918 influenza pandemic on the US Military. She states: "The Army and Navy medical services may have tamed typhoid and typhus, but more American soldiers, sailors, and Marines would succumb to influenza and pneumonia than would die on the industrialized battlefields of the Great War."[18] Byerly

explains how the harsh living conditions and close living quarters not only facilitated the transmission of the disease from one individual to another, but the circumstances may have also set up favorable conditions for the selection of viral genetic mutations that made the strain more deadly. Poor nutrition, close contact, and poor hygiene facilitated the spread of the disease, eventually evolving into the most severe influenza pandemic to date. A similar concern presented itself in the health care institutions and austere living conditions in West Africa during the 2014 Ebola epidemic.

Some scholars disagree that "Spanish" influenza was brought to the US by returning Service Members who served in Europe during World War I.[19] It is widely believed that the disease was called "Spanish" influenza because the first reports to public health agencies of an influenza epidemic in 1918 came out of Spain (not so different than how the strains of Ebola were named in accordance to the location they were first reported from). However, there are numerous cases of the deadly 1918 influenza reported in the US War Department Medical Service statistics before the outbreak occurred in Spain. According to the War Department's statistics, influenza had struck roughly 26 percent of the Army in 1918. Alarmingly, nearly 30,000 Service Members died from the disease before they reached the front lines in France.[20] The first cases of the more virulent strain in the US were reported on August 27, 1918 at the Commonwealth Pier in Boston. The infection spread quickly and was reported on several Naval installations throughout the area in a matter of days.[21] The first reported civilian case was on September 8, 1918. Within ten days the local military health care facilities were stretched beyond their capacity.[22] Similarly, the potential spread of the 2014 Ebola epidemic by returning healthcare workers and Service Members was a real concern.

By the time the 1918 influenza pandemic had reached American soil in August, it had already had a staggering impact in Europe. The first documented cases of the mild form of influenza were reported frequently from June to July 27th, but from that date forward the reported cases were much more severe. One medical officer, Alan Chesney, reported that the cases seemed to come in waves as new units rotated through his brigade's training area on the way to the front line. He noted that each wave grew in severity with the later waves resulting in death of some Soldiers.[23] This is somewhat similar to how the 2014 Ebola epidemic grew to be larger and more severe than was initially expected as it moved from one area to another.

Once medical professionals realized the seriousness of the influenza epidemic in 1918, infected individuals were quarantined and the importance of hygiene was re-enforced (a similarity to the early stages of the 2014 Ebola epidemic). Ironically, in 1918, ill Soldiers were transported to the rear to recover which increased the potential of transmission. One could argue that the environmental conditions and the evolution of a more potent virus facilitated the onset of the 1918 Influenza epidemic that spread worldwide (not so different from early concerns that were echoed worldwide during the 2014 Ebola epidemic). Fortunately, proactive measures and population education helped to decrease the spread of the Ebola virus in 2014.

It is common knowledge that when Service Members or health care-aid workers return home, they have the potential to carry infectious diseases. It could be argued that the influenza pandemic of 1918 would have spread to the US regardless of the return of Service Members from the battle fields of Europe during World War I due to inadequate screening or medical capabilities. The 1918 influenza pandemic spread throughout many

countries that did not have troops involved in the World War I European Theater. It is probable that the 1918 influenza would have been transmitted by trade routes or travelers visiting the US. Current research has been unable to determine when or where the specific viral mutations occurred which led to such high mortality rates as seen in the 1918 influenza epidemic. This differs from the 2014 Ebola epidemic in which early cases were detected and attributed an initial disease outbreak in Guinea in 2013. Cases of Ebola infection of healthcare workers or travelers in 2014 and 2015 were well documented. Outbreaks of the Ebola virus disease have sporadically appeared since the 1970s. A mutation resulting in a more virulent disease is a concern when considering infectious diseases such as the Ebola virus. The ease and speed of modern travel magnifies that concern as global travel and commerce continues to increase.

The emergence of the more virulent influenza strain of 1918 provides an historical perspective on the impact of viral epidemics. After roughly 675,000 Americans died from the 1918 influenza pandemic, the disease ran its course in the US. Victims either died or built up immunity. Eventually the same would be true for populations throughout the world; although, influenza breakouts with higher than normal mortality rates would be reported throughout the world up until 1921.[24] An examination of the 1918 influenza pandemic further drives home the importance of appropriate detection and surveillance of infectious diseases. Effective identification and preventative responses can decrease the potential for transmission of infectious diseases. The employment of US Military assets in support of the 2014 Ebola epidemic global response helped to mitigate further spread of the disease.

Doctrinal Support of US Military in Response to the Ebola Epidemic

The foundational principles used for the analytical basis of the US Military's response to the 2014 Ebola epidemic are outlined in the *National Security Strategy* [25] and the *Quadrennial Defense Review*.[26] The operational objectives of the Joint Forces Command deployed in response to the epidemic were based on principles found in the *National Security Strategy* and the *Quadrennial Defense Review*. The correlation between doctrine and policy is supported by the President's "Fact Sheet: US Response to the Ebola Epidemic in West Africa."

The *National Security Strategy* addresses security, prosperity, values, and international order. The President used the principles outlined in the *National Security Strategy* as a basis to justify using the US Military to support the global Ebola epidemic response. The President determined that the Ebola epidemic in West Africa posed a threat to US national security. By defining the epidemic response as an objective that supports national security, the use of the US Military in support of the global response is based on the *Quadrennial Defense Review* tenant that military assets may be used when "necessary to protect the core interests of the United States."[27]

Multi-organizational Response

The US Military was not the only US Government agency that the President tasked to support the global response efforts to the Ebola epidemic in West Africa. The United States Agency for International Development (USAID) and the Civilian Response Corps all have the capability to conduct epidemic response operations. USAID is the proponent agency that works with foreign governments to build internal civil capacities.[28]

The USAID Emerging Pandemic Threats Program identifies and responds to emerging infectious diseases. Response to emerging infectious disease is one of the USAID's primary objectives in the organization's Global Health Initiatives. It should be noted that the Civilian Response Corps' mission includes recruiting, training, and deploying personnel to support civil relief efforts.[29] However, the Civilian Response Corps is under budget constraints and is not able to effectively respond to a global epidemic scenario.[30]

The primary international agency that responded to the 2014 Ebola crisis was the World Health Organization from the UN with each host nation government taking the lead in their own nations. The World Health Organization's response to the 2014 Ebola epidemic in West Africa was designed to operate in three phases. Phase 1 focused on rapid response efforts; Phase 2 focused on increasing capacities to fight the outbreak; and Phase 3 focused on interrupting the remaining chains of Ebola transmission and responding to the consequences of residual risks.[31] The United Nations' efforts also included the United Nations Mission for Ebola Emergency Response, the World Food Program, the United Nations' Food and Agriculture Organization, and the United Nations International Children's Fund. Other international agencies included the African Union, the European Union, the Innovative Medicines Initiative, the International Charter on Space and World Disasters, and the World Bank Group.

There were many NGOs that responded to the 2014 Ebola epidemic in West Africa. Some of the more notable NGOs that responded to the 2014 Ebola crisis included the Red Cross-Red Crescent, Doctors Without Borders, Catholic Relief Services, Africare, The Samaritan's Purse, Wellcome Trust, the Gates Foundation, Direct Relief, and International Mutual Aid. Coordination and combined effort between governmental,

international, and NGOs was important to mission success in the response to the epidemic.

According to the *National Security Strategy* and *Quadrennial Defense Review*, responding to epidemics in order to avoid global pandemics supports US national security interests. Additionally, there were concerns that the Ebola virus could be weaponized. The threat of the possibility that the Ebola virus could be used in biological warfare made the epidemic even more of a national security issue.[32]

Conclusion

The first secondary research question addressed is "How did the US Army interact with the other US agencies, international agencies, and non-governmental organizations that responded to the 2014 Ebola outbreak?" Some of the issues that the US Military dealt with while working in a multi-national and multi-organizational relief effort and threat response situation will be discussed in chapter 4.

The final secondary research question addressed in this study is a collection of "Recommendations for improvements of the military's response to humanitarian assistance and disaster relief efforts." The format of the study of the final secondary research question will be presented in a "Lessons Learned" framework. The intent is to leverage the experience gained from the operation to better prepare for future humanitarian response efforts exercised by the US Military. Literature review documents concerning the Ebola epidemic response as well as historical accounts by individuals who organized the response are included in the assessment of chapters 4: Analysis. The data will provide a basis for assessment in chapter 5: Conclusions and Recommendations.

The intent of this study is to use literature review and historical accounts as a research methodology to answer the primary research question within the identified assumptions, limitations, and emphasis outlined in chapter 1. The goal is to assess the operational approach, effectiveness, and experience gained from the US Military's response to the 2014 Ebola outbreak in West Africa. The information gathered while considering the primary research question ("What were the biggest challenges to the US military faced during the 2014 Ebola epidemic?") will be useful in answering the secondary research questions ("What were some of the issues for the US military while working in a multi-national and multi-organizational relief effort?; "What would better prepare US military units to participate in complex humanitarian relief efforts?"; and "Recommendations for improvements of the military's humanitarian assistance and disaster relief efforts."). Chapter 4 will include an analysis of the data collected within this study. Chapter 5 will include a compilation of recommendations based on the assessment of the data and information presented in the previous chapters.

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CHAPTER 3

RESEARCH METHODOLOGY

Introduction

Several reference methods and resources were used to answer the primary research questions, "What were the biggest challenges to the US military during the 2014 Ebola epidemic response?," as well as the secondary research questions. Research methods included literature review, assessment of operations from a clinical view point, and the development of lessons learned from a disease detection, response, and surveillance perspective. The research began with a review and qualitative analysis of literature. The original intent of the research project was to develop lessons learned from the 2014 West Africa Ebola epidemic. However, after the initiation of research, the Center for Army Lessons Learned (CALL) published an Initial Impressions Report titled "101st Airborne Division (Air Assault) United Assistance"[1] in November 2015. The report was posted on the Center for Army Lessons Learned website on December 7, 2015. This report outlines lessons and best practices as assessed by the CALL during Joint Operation United Assistance. The lessons learned and best practices cited in the report will be expounded upon to include a clinical epidemic response perspective rather than just a military operational perspective.

Professional medical and civilian organization documents were used as references to further explore lessons learned and recommended best practices in multi-national—multi-organizational disease response efforts in order to identify challenges to future operations. The secondary research questions will facilitate analysis and evaluation of the Army's response to the 2014 Ebola epidemic. Answers to the primary research question

will be combined with research findings to develop clinical and operational recommendations.

Research Approach

Upon completion of the literature review, an understanding of the concept, scope, and execution of the Army's response will help to develop recommendations for future epidemic responses. The intent of this research project is to provide a perspective that may be used to better prepare for future epidemic conditions and challenges. The perspective will include broad concepts to facilitate future operational concepts on how to "change current conditions to the desired future conditions."[2] The research perspective will include an assessment of the lines of effort concept and incorporate a multi-national—multi-organizational approach. For this research project, a line of effort is described as "a line that links multiple tasks using the logic of purpose rather than geographical reference to focus efforts towards establishing operational and strategic conditions."[3]

Qualitative Methodology

Research was conducted though qualitative methodology by gathering data in the form of words, documents, pictures, and statistical representations.

> In analyzing qualitative data, the researcher must know the material, focus the analysis and categorize the information by identifying themes or patterns and organizing them into coherent categories. The researcher then continues with an interpretation of the data where he attaches meaning and significance to the analysis.[4]

The research conducted in this project is focused on understanding the information related to the 2014 Ebola epidemic in West Africa in order to provide analysis and

recommendations. The qualitative method used in this research project relies upon a review of information from a broad range of sources in order to provide analytical comparisons and categorizations to facilitate minimally biased assessments and establish valid findings. Sources of information include media and professional reports, technical-scientific articles, official documents, and personal observations, as well as expert analysis in referenced publications.

The research is conducted as an intrinsic case study format to analyze the US Military's response to the 2014 Ebola epidemic. A qualitative intrinsic case study can be used to research a unique case that requires detailed description. The US Military's response to the 2014 Ebola epidemic meets the intrinsic case study criteria for the following reasons: it resulted in the first United Nations Security Council health emergency resolution by unanimous vote; it was the first time an epidemic was declared a national security threat by the US President; it was the first time US Forces were deployed in response to an infectious disease epidemic; and it was the first time that DOD entities were deployed to support DOS entities who's mission was to support a foreign government's response to an epidemic. A good qualitative intrinsic case study should present an in-depth understanding of the unique case. In order to accomplish this, the researcher analyzed and categorized collected qualitative data from eleven 101st Airborne Division command and general staff interviews; as well as DOD, DOS, World Health Organization, and UN documents. The key to understanding the analysis of this intrinsic case study involved a detailed description of how the US Military interacted with partner organizations through operational lanes during the relief effort. Qualitative data is organized into the themes of doctrine, organization, training, materiel, leadership

and education, personnel, and facilities (DOTMLPF). Focusing on categorization and analysis of lessons learned helped to understand the complexity of operational lanes within the context of the DOTMLPF themes.[5]

Research Design

The first step of the research design process was to define the research approach. For this research project, an intrinsic case study qualitative research methodology was chosen as described in the section above. Documents and applicable professional publications were reviewed and selected. “Applicable” is defined as providing information that addresses the primary and secondary research questions.

The second step was to identify informational resources that provided assessment of or have a distinct correlation with the primary and secondary research questions. The most significant sources identified include: the CALL Initial Impressions Report “101st Airborne Division (Air Assault) United Assistance,” the White House’s “FACT SHEET: US Response to the Ebola Epidemic in West Africa,” the President’s *National Security Strategy*; the Department of Defense’s *Quadrennial Defense Review*; and the World Health Organization’s “Ebola outbreak 2014-present: How the outbreak and World Health Organization's response unfolded.” report; all of which are annotated in the endnotes section of this research project. In addition, several independent research papers, military publications, professional articles, and inter-disciplinary published works were used and cited throughout the research project to better define the environmental conditions, organizational activities, and problems presented by the 2014 Ebola epidemic in West Africa.

The third step of this research project was to collect and assess data. This step included the collection and review of information that has a direct correlation with the primary and secondary research questions. Even though the 2014 Ebola outbreak was a relatively recent event, the resources available that address the epidemic were extensive. One research problem that manifested was culling information resources to be sure they are relevant and reliable when considering the primary and secondary research questions. Multiple sources and research references are cited throughout this document. Significant emphasis is placed upon primary resources. Professional documents and "expert opinions" as referenced were also included in the research project as well as individual historical accounts. It should be noted that recognition of the importance of firsthand accounts should not be minimized even though there is an expected amount of perceptual bias associated with individual historical accounts.

The fourth step of this research process was to analyze the data presented by the sources identified during the previous step of the research process. A comprehensive analysis was conducted to access the information and categorize the data into relevant research lanes or topics. Some of the relevant topics considered were: disease containment, effectiveness of response, collaboration between responding parties, and degree of success to which desired end-states were achieved by the major parties responding to the 2014 West Africa Ebola epidemic. Secondary factors considered include security, local health care, force protection, global perception of response efforts, and the "on ground" coordination between major players during the response.

The final step of the research process is the application of lessons learned to be applied to future infectious disease responses. The primary intent of this research project

is to provide “lessons learned” which may be applicable to future military epidemic responses that have a global impact. The framework of this research project leverages the retrospective analysis of operations with the advantage of recognizing areas of improvement within the military and international community actions during the 2014 Ebola epidemic infectious disease response.

Evaluation Criteria

The evaluation criteria for the primary and secondary research questions will encompass documented military and civilian organizational purposes and goals to assist in determining if the courses of actions achieved the desired results. Primary resources are used for the basis of research analysis; however, secondary research references are used to provide operational time lines and civil perspectives to further assess global perceptions and response effectiveness.

Research Validity and Biases

Every researcher should be concerned about circumstances that affect the validity of their research as well as recognize the biases that are present within the scope of the research framework. Issues that pose problems for the validity of this research project include the accuracy of resources, logical thought processes of the researcher, and individual perceptions. A unique challenge for this research project is correlating and assessing actions by the military, governmental, and non-governmental players associated with the 2014 Ebola epidemic response efforts. Credibility and dependability is established through the interviews of the 101st Airborne Division personnel who

participated in the relief effort. Their firsthand accounts are outlined as valid and credible lessons learned.

Another issue impacting the validity of this research project is the limited incidences from which the 2014 Ebola epidemic can be cross referenced against. International humanitarian emergencies do provide some references; however, the last major global epidemic response effort was during the 1918 Influenza epidemic. Some references and correlations can be made during the HIV/AIDs epidemic response, but that response was more of a chronic (long term) response rather than an "outbreak" response as characterized by the 2014 Ebola epidemic response effort. Circumstances concerning research validity were considered at every step of the research process.

Psychological traps (biases) can also threaten the validity of a research project. A researcher should be aware of cognitive biases that effect research thought processes. The research's unchecked frame of reference can have a huge impact on research results. Research cognitive biases may include: anchoring, status quo, sunk-cost, confirmation, or sample size biases.6 Each of these cognitive biases may influence research thought processes by distorting the perception of research data or reference material.

The effective researcher must consider validity and biases when conducting research. This research project recognized the importance of taking measures to minimize the issues that impact validity by relying only on vetted sources for information and sought to decrease the introduction of biases by approaching the primary and secondary research questions as holistic problems.

Research Outline

This research project document includes five chapters. Chapter 1 serves as an introduction and outlines the background of the 2014 West Africa Ebola epidemic and includes a brief summary of the global response. Chapter 1 also defines some key terms and defines major players in the infectious disease response efforts. Chapter 2 explains the process of literature review. It further defines concepts and important issues as identified by the researcher. Chapter 3 identifies and presents the details of the qualitative research method used in the project. It discusses the structure of research as well as the distinction between resources and processes adopted throughout the research process. Chapter 4 presents research analysis of references and issues when considering the primary and secondary research questions. Chapter 5 provides a conclusion along with application of recommendations to address recognized concerns.

Conclusion

The intent for using a qualitative research methodology is to appropriately answer the primary research question while reducing the complications associated with validity, biases, and limitations (as outlined in chapter 1). The holistic approach to literature review in addressing the primary research question will facilitate the answering of the secondary research questions. The next chapter (chapter 4) contains an analysis of the data collected within the research framework of this project.

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CHAPTER 4

RESEARCH ANALYSIS

Introduction

On September 16, 2014, the President of the United States identified four objectives to fight the Ebola outbreak in Liberia: control the outbreak, address the epidemic's effect on local economies and communities, coordinate a broader global response, and build a regional public health system in the region. The Secretary of Defense designated the 101st Airborne Division to: establish the Joint Forces Command United Assistance (JFC-UA) and provide support to the response; increase capabilities of the government of Liberia, educate and care for government of Liberia citizens, and create conditions for the Government of Liberia and other stakeholders for sustained epidemic response. The JFC-UA was tasked to support the USAID which in turn supported the Government of Liberia.[1]

The JFC-UA was tasked to support the USAID Disaster Assistance Response Team which in turn supported the Government of Liberia. The organization of a joint task force under USAID in support of a foreign government was a unique structure that required trust and confidence between the international players and the United Assistance Partners. The JFC-UA identified key tasks that were critical in supporting the relief response. Protecting US Service Members and preventing exposure to Ebola was a primary concern. The JFC-UA team also recognized the importance of training an adequate number of health care workers to operate the 19 Ebola treatment units. The Joint Forces Command was also to provide oversight of Ebola treatment unit construction sites as well as provide supplies required to support the mission. JFC-UA also leveraged

the US Army 1st Area Medical Lab to provide diagnostic testing in order to track and assess patterns and prevalence of the Ebola virus disease. The final task identified by the Joint Forces Command was to transition support efforts to the follow-on civilian, USG, and Government of Liberia agencies as JFC-UA military personnel redeployed. It was important that JFC-UA set the conditions for continued success.

The CALL Initial Impressions Report "101st Airborne Division (Air Assault) United Assistance"[2] provides an opportunity to assess and evaluate the lessons learned and best practices of Joint Operation United Assistance. The lessons learned and best practices cited in the report are categorized into operational lanes and sustainment concerns are addressed at the end of the report. In this chapter, the lessons learned and best practices cited in the CALL Initial Impressions Report will be reframed and categorized into the themes of DOTMLPF. Doctrine describes the way military forces operate. Organization is how military units are organized to operate. Training describes how military forces prepare to conduct operations or missions. Materiel is defined as the items, equipment, or supplies needed to operate. Leadership and Education includes how leaders and Soldiers are developed professionally. The Personnel element addresses the availability of qualified individuals. Facilities are defined as properties that support military forces.

The DOTMLPF format can be used as a problem-solving construct for assessing current capabilities and managing change.[3] Adaptation through innovation, experimentation, and leveraging experience enables effective change. Changes across the DOTMLPF elements help the Army to improve overall capabilities. Classifying the Initial Impressions Report information in a DOTMLPF theme format will assist with the

development, evaluation, and integration of the concepts, lessons learned, and best practices identified in the Initial Impressions Report to identify requirements and solutions as well as better define capability gaps associated with the 2014 West Africa Ebola response.

Doctrine and Command

The 101st Airborne Division had been preparing for a Decisive Action mission in accordance with current doctrine for their upcoming deployment cycle when they received notification of their selection to deploy in support of the West Africa Ebola response. Few 101st Airborne Division staff members had experience in humanitarian assistance and disaster relief missions.[4] The Division needed up to date information in order to adjust to planning for a human assistance and disaster relief mission. The 101st Airborne did not doctrinally fall under the United States Army Africa (USARAF) command structure according to the Unified Command Plan. It fell to the USARAF Army Service Component Command (ASCC) to set the operational theater within mission parameters. Even though the 101st Airborne was not regionally aligned under USARAF command structure, the USARAF ASCC was able to provide the 101st Airborne with information to gain situational understanding, access contact information for key relief effort personnel, and establish a rapport with Government of Liberia's political and military leaders, as well as the US Embassy in Liberia. To complicate the matter, the 101st Airborne was in the process of fielding new communications equipment and was not functionally prepared to deploy to an austere environment until the Division's communication equipment was in place and training was completed. Fortunately, the Geographic Combatant Commander was able to coordinate with the Joint

Communications Support Element to resolve communication system shortfalls and facilitated an intermediate communication's capability using joint enablers. Through coordination with organizations outside their typical chain of command, the 101st Airborne Division was able to prepare for a mission in which they had not been doctrinally planning for under their Unified Command Plan.

The concept of military forces falling under the umbrella of a federal agency outside the DOD made the United Assistance scenario very complex. Unique considerations presented themselves to the JFC-UA commander while executing mission command in an austere environment in support of a federal agency outside the US. The significance of detailed and thorough planning with agencies and organizations outside the DOD was paramount. The Joint Forces Command team's initial focus was to allow the USAID Disaster Assistance Response Team leaders and planner to exploit the unique skill sets of the 101st Airborne Division. For example, the division's skills in predictive analysis and planning proved useful in the initial stages of the operation.[5] The importance of building trust, rapport, and a team-work mentality with individuals outside the military channels became critical throughout the mission. The division had to work with Government of Liberia-regional-tribal leaders, NGOs, and inter-governmental organizations as well as the DOS and UN officials.

The lack of a developed information flow process that continuously informs Regionally Aligned Forces unit level commanders of regional issues, the unpreparedness of the 101st Airborne Division for an African human assistance and disaster relief mission, and the lack of established relationship between the 101st Airborne Division, USARAF, and the Geographic Combatant Commander was not typical for the Regionally

Aligned Forces doctrine. It could be argued that it is completely contrary to the Regionally Aligned Forces doctrine. Selecting forces to deploy that are not regionally aligned with the Geographic Combatant Commander and regional command structure created a human assistance and disaster relief mission scenario with layers of complexities that are outside the current Regionally Aligned Forces doctrine. The 101st Airborne Division command made a conscious decision to make their supporting efforts in combating the Ebola Virus Disease the primary focus of their efforts rather than focusing on the typical objectives associated with their normal doctrinal mission (Decisive Action operational status and associated operational objectives within a Decisive Action operational environment).[6] This required a leadership philosophy and organizational mentality that was adaptive to the situation rather than being reliant on doctrine. However, it could be argued that the emergent situation of a typical human assistance and disaster relief mission is by nature outside the scope of routine doctrinal planning and execution.

Contrary to current joint doctrine, once the 101st Airborne Division established the JFC-UA command structure they did not create a Civil-Military Operations Center (CMOC). Rather, the command team chose to adapt to the current on the ground mechanism to support the establishment of an operations center in conjunction with the Liberian Government. This command decision facilitated the general operational concept to incorporate and capitalize on the existing multi-partner crisis management system. This avenue of approach provided for a clearinghouse and multi-faceted organizational collaborative team environment for partnership organizational meetings and decision making processes facilitated through the Liberian Government's National Ebola

Command Center. In essence, this manifested into a conduit for the National Ebola Command Center to serve as a national-level CMOC; leveraging multi-national and multi-organizational assets into one humanitarian assistance operations center. This allowed for civic, governmental, and military organizations to act in unison as a stronger force to contain the Ebola epidemic. In military terms, it could be said that the National Ebola Command Center became the center of gravity where collective and collaborative decisions were made to overcome the threat of the spread of the Ebola virus disease.[7]

Organization

The USARAF ASCC was tasked to set the theater to support United Assistance. The concept of a theater army allows the combatant commander the ability to employ ground forces with in an area of responsibility and across the range of military operations. The USARAF ASCC commands the combat and supporting forces in the Africa region until the combatant commander attaches selected Army forces to a Joint Forces Command. When the Joint Forces Command is established, the Theater Army divides its responsibilities between the Army component in the joint operations area and other Army forces operating in other parts of the area of responsibility.[8] The new requirement of the human assistance and disaster relief mission presented challenges to the USARAF ASCC from an "economy of force" perspective.

Joint Publications (JP) 3-0, *Joint Operations*, states that "The strategic environment requires the United States to maintain and prepare joint forces for crisis response and limited contingency operations simultaneously with other operations, preferable in concert with allies/or coalition partners when appropriate."[9] JP 3-0 also states:

> The purpose of economy of force is to expend minimum essential combat power on secondary efforts in order to allocate the maximum possible combat power on primary efforts. Economy of force is the judicious employment and distribution of forces. It is the measured allocation of available combat power to such tasks as limited attacks, defense, delays, deception, or even retrograde operations to achieve mass elsewhere at the decisive point and time.[10]

The USARAF ASCC was tasked to provide support for the ongoing operation, fulfill Title 10 US Code responsibilities (provide active duty personnel), deploy a contingency command post, and accomplish theater security cooperation missions.[11] The theater army is organized, manned, and equipped to serve as the ASCC for the Geographic Combatant Commander. It should be noted that the USARAF ASCC has an area of responsibility that contains 54 countries across Africa which is nearly three times the size of the continental US. To compound the problem, the USARAF ASCC has fewer enabling capabilities which would normally be associated with such a large area of responsibility. This translated to the realization that the USARAF ASCC has limited capabilities to achieve the additional tasks associated with forming a Joint Task Force headquarters and joint force land component command for a limited contingency operation such as United Assistance.

Training

Pre-deployment training plans should address the specific requirements for the humanitarian assistance and disaster relief mission. The concept for pre-deployment training should be framed from the perspective that personnel may be deploying to the operational area from multiple locations around the globe. In the case of the 2014 Ebola epidemic response, pre-deployment training required more than the standard pre-deployment training tasks associated with a typical Brigade Combat Team's deployment.

Pre-deployment training included briefings on the specific biological safety measures required in a response to the Ebola epidemic; roles of other USG agencies; the culture and leadership of Liberia; the operational environment of the relief mission; and how to integrate into a multi-organizational, multi-national relief effort. The 101st Airborne Division created a leaders book titled, *The 101st Airborne Division Liberian Response Support Force: Operation United Assistance-Liberia* to describe the Liberian operational environment; key intergovernmental and partnership organizations; geographical and operational maps; international leader biographies and organizational histories; and additional operational environment information in order to develop the deploying Service Member's awareness and increase their knowledge of the multi-dimensional situation in which they would be involved.[12]

The 101st Airborne Division was able to leverage command post training during warfighter exercises that they had previously conducted while preparing for a decisive action rotation in an austere environment. The training focused on the physical set up and operational layout of the division main command post and the tactical command post. Although the previous training was not specific for a human assistance and disaster relief mission, it was helpful in ensuring the command post concept was understood and that the staff knew how to complete and equip a command post in an austere environment. Once the division was notified of its selection to deploy as a Joint Forces Command in support of Operation United Assistance rather than a decisive action rotation, the command team was able to modify the training of an upcoming warfighter exercise. This allowed the staff to better understand how the command post infrastructure, operational rhythm, reference terms, staff responsibilities, processes, and Military Decision Making

Process related to a human assistance and disaster relief mission prior to deploying.[13] Fortunately, Liberia was less austere than had been expected but the command post training still proved to be very beneficial.

It was important that the 101st Airborne Division staff understood the roles and capabilities of United Assistance partners and stakeholders. Pre-deployment staff training was organized with representatives from various agencies as well as retired generals who had experience as joint force commanders conducting human assistance and disaster relief operations in support of a lead federal agency. The training provided a platform to gain understanding of how United Assistance partners were expected to function as well as introduce the staff to the UN cluster system for coordinating operations. Training on operational contracting facilitated the establishment of the operational contracting cell. The training also helped the staff better understand USAID and Government of Liberia lines of effort and objectives.[14] Pre-deployment training to educate staff on the functions and responsibilities of mission partners and stakeholders should be conducted to prepare the staff if possible.

Pre-deployment training should incorporate the use of the Joint Operation Planning and Execution System, the Transportation Coordinator's Automated Information for Movement System, and the use of unit movement lists to be prepared for an expeditionary environment that may be associated with sustaining humanitarian assistance and disaster relief missions. For the most part, deployments to Iraq and Afghanistan consisted of units falling in on already positioned equipment. As a result, the familiarization of full deployment operations and the staff competence of deploying a complete unit according to its modified table of organization and equipment have

declined. As the 101st Airborne Division deployed in support of United Assistance the division transportation officer was challenged with understanding and translating Transportation Coordinator's Automated Information for Movement System data and unit movement lists information into a Joint Operation Planning and Execution System format that could be used by strategic planners. To complicate the matter, USARAF does not have an organic theater sustainment command (TSC) or expeditionary sustainment command (ESC). The 101st Airborne Division had to coordinate with strategic level movement and support organizations to facilitate the deployment of the division to Liberia. The 21st TSC provided assistance from the US Army Europe, but many theater level sustainment tasks fell to the division sustainment brigade during deployment and throughout the mission. Unfamiliarity of theater level sustainment tasks and the lack of adequate staff to coordinate theater level sustainment operations was a challenging burden as the 101st Airborne Division sustainment brigade.[15] Unit level training planners should incorporate expeditionary type tasks into training exercises. Command teams should ensure they have an adequate number of Contract Officer Representatives to support contracting operations. Sustainment brigade staff should familiarize themselves with the deployment and sustainment systems associated with echelons above their own level in order to prepare for missions in areas that are not supported by a TSC or ESC.

Environment restrictions and limitations within the US did not allow the sustainment brigade to conduct spectrum water and fuel handling training prior to deployment. The reverse osmosis water purification units did not have an adequate body of water to train with. Additionally, some of the chemicals used during water treatment and fuel support operations could not be used within the Fort Campbell area. The

restrictions and limitation resulted in the units not being able to complete all training tasks until they arrived in Liberia. The delay of training completion did not have a significant impact on the mission. However, even with reverse osmosis water purification, a readily available water resource could not be initially identified. Fuel was consistently substandard. The water and fuel situation resulted in extensive testing by sustainment brigade personnel. Water processing and fuel handling training considerations should be planned for during future humanitarian assistance and disaster relief operations in austere environments.

Materiel

Once on the ground, the 101st Airborne Division realized that there was no communications or global positioning satellite coverage. Internet accessibility was important in order to share information among USG agencies, Liberian government agencies, relief effort partners, and stakeholder organizations. Additionally, the lack of satellite coverage negated the Blue Force Tracker system; a global positioning system that allows for the location and tracking of friendly forces. This greatly affected air operations. It was necessary that a Non-classified Internet Protocol Router Network and global positioning satellite coverage be established. USAFRICOM adjusted satellite coverage from its headquarters in Germany to extend Non-classified Internet Protocol Router Network and global positioning capabilities to the joint operational area. The Non-classified Internet Protocol Router Network facilitated communication between partner agencies and organizations.[16] On this net, all communications were established as unclassified. In order to further facilitate unclassified communications, 400 cell phones and tablets were purchased and used extensively to enhance mission command. The

redirected global positioning capabilities allowed for the use of the Blue Force Tracking System and air operations were able to proceed. The Non-classified Internet Protocol Router Network, cell phones, tablets, and Blue Force Tracking System were used though out the operation. Communications and global positioning satellite coverage for humanitarian assistance and disaster relief operations in an austere environment are extremely important and should be verified prior to deployment during the early planning phases of the operations.

Ensuring that critical information was effectively disseminated to all the United Assistance partners in a timely manner was a complicated task. The JFC-UA was able to use the All Partners Access Network (APAN) with support from USAFRICOM. The APAN is an open access system accessible online. The unclassified website provided information on humanitarian assistance and disaster relief operations. The APAN was primarily used for information sharing and increased situational understanding. Collaboration through APAN decreased response times between United Assistance partners.[17] The 101st Airborne Division used the website to keep participating organizations informed of the common operational picture. The system facilitated daily intelligence summaries, information of lab locations, Ebola treatment unit status, community care centers, and helicopter landing zones. It also helped distribute weather updates, critical Ebola disease information, outbreak locations, security updates, medical assessments, news, and epidemic trend data.[18] The 101st Airborne Division was able to develop the APAN system and pass it on to follow-on organizations to ensure that the capability was sustained. An information sharing system is only as useful as it is user friendly. APAN's capability provided real time relevant information to relief effort

partners on an unrestricted web based system, which was a critical capability for the management of the emergency Ebola crisis situation. The APAN system is maintained by the combatant commands and commanders should ensure that APAN training is implemented into command post exercises. APAN should be the primary knowledge-sharing website for humanitarian assistance and disaster relief missions to ensure the appropriate dissemination of information to all partners.[19]

Materiel solutions are often times are only as good as the personnel who implement them. A civil information management cell was established to help manage APAN. The civil information management cell also used the Civil Information Management Data Processing System as an additional repository for all gathered Liberian civic data. To compliment the information collected by the civil information management cell, a civil affairs planning team processed information derived from open-source data, the Liberian Ministry of Health, international government organizations, and NGOs in order to present relief effort information in a logical and user friendly format on APAN and Civil Information Management Data Processing System. Once posted on either one of these two data resource websites, the information was available for operational partners and interested community stakeholders. APAN and Civil Information Management Data Processing System promoted a better understanding of the combined efforts in response to the Ebola epidemic crisis.

The 1st Area Medical Laboratory (1st AML) was deployed with analytical equipment and medical diagnostic capabilities in support of Operation United Assistance. The 1st AML was able to decrease blood testing result times which assisted the relief effort partners in analyzing and tracking Ebola virus disease trends. Getting this data as

quickly as possible was very important in organizing and deploying assets and capabilities as the Ebola virus disease spread. The 1st AML also provided clinical diagnostic medical testing for Ebola patients. The 1st AML's mission is to deploy world-wide as a unit or by task organized teams to perform surveillance, confirmatory analytical laboratory testing, and health hazard assessments of environmental, occupational, endemic, and Chemical-Biological-Radiological-Nuclear-High Yield Explosives threats in support of force protection and weapons of mass destruction missions. The 1st AML has the capability to test air, water, soil, food, waste, and vectors for a broad range of microbiological agents as well as radiological and chemical contaminants. The 1st AML's diagnostic equipment and expertise proved to be critical assets in the fight to contain the Ebola epidemic.

The command team chose to contract for host nation transportation assets rather than use military equipment as transportation assets. Contracting for local transportation assets allowed for the division to minimize their equipment footprint. It took up to 13 days to travel across rough roads and open terrain to the farthest Ebola treatment facility. Fuel quality on the local economy was substandard and typically not appropriate for use in military vehicles. Local drivers were better able to navigate the poor road system as their vehicles were better adapted to travel the narrow village roads, poorly maintained bridges, and undeveloped roads. Additionally, the use of local contracted drivers negated the security requirement that would normally be associated with a US Military convoy. Liberian roads are notoriously dangerous due to the unsafe driving practices of local nationals. Local drivers were able to provide their own security, attain local fuel, find local lodging that would not be readily available for US Military Service Members, and

eat meals on the local economy. The use of local contracted drivers also decreased the cost of "maneuver damage" that required repair from the travel of heavy tactical vehicles.[20] Military transportation equipment was used when it was advantageous, but the use of local transportation assets was far more beneficial for many transportation requirements. It may be advantageous to assess local transportation challenges and the availability of local transportation assets when considering humanitarian assistance and disaster relief sustainment requirements.

Leadership and Education

Due to the unique organizational construct of joint forces falling under the USAID Disaster Assistance Response Team which in turn supported the Government of Liberia, it was important to educate joint forces personnel on the concept of military forces acting in a human assistance and disaster relief supportive role. Prior to deployment, joint forces personnel were educated on the importance of conveying the message that the USAID Disaster Assistance Response Team was the USG lead in support of the Government of Liberia. Key military members were educated on how the cooperating interagency, intergovernmental, multi-national, and NGOs operated.[21] Educational requirements were identified and educational efforts were coordinated with the USAID Disaster Assistance Response Team through the US Ambassador's office in Monrovia. With the Government of Liberia taking lead of all support operations, the United Assistance partners and international community were able to better work together once there was a shared understanding of combined capabilities and how those capabilities fit into lines of effort.

Once the 101st Airborne Division was on the ground the staff worked with the USAID Disaster Assistance Response team and other United Action partners to gain better situational understanding. The leadership focused on the integration and synchronization of DOD's unique capabilities into the framework of the relief effort activities that were already on the ground. It was a challenge to determine the roles of the many mission partners. The 101st Airborne Division leaders and liaison officers (LNOs) realized very quickly that the multitude of mission partners and stakeholders had a different understanding of the operational environment, primarily the infection and death rates from the Ebola virus disease.[22] Tracking infection patterns and death rates was extremely important information that was necessary to organize efforts in containing the epidemic. It was difficult to process information in different formats as reported by the multitude of agencies in the relief effort. It was important to develop a consensus on baseline data in order to make informed decisions as the relief effort grew. The LNOs and intelligence analysts worked with the Liberian Ministry of Health as the lead organization to develop processes to validate incoming reports and improve report accuracy. The leadership team also worked with the Ministry of Health to design a common operational picture that would promote a shared understanding and enhance teamwork between the mission partners. Planners use scenario planning, a strategic method used to create flexible and adaptive long-term plans, to develop branch plans and sequels.[23] This proved to be extremely useful in a humanitarian assistance and disaster relief environment with so many mission partners. It took adaptive and flexible leadership as well as coordination and collaboration to define how the large number of mission partners and stakeholders

could be incorporated and synched within the framework of the overall response effort to contain the Ebola virus epidemic.

Prior to deploying, the 101st Airborne Division's intelligence staff (G-2) had a difficulty gathering adequate intelligence on political, military, economic, social, information, infrastructure, physical environment, and time in the short deployment preparation time period associated with a human assistance and disaster relief missions. USARAF and USAFRICOM received strategic and operational level planning information from the US Embassy in Monrovia, the US DOS, the Government of Liberia, NGOs, and inter-governmental organizations. However, tactical level information regarding the austere environment was difficult to attain. The 101st Airborne Division completed the operational environment assessments and intelligence preparation of the battlefield; however, when the division arrived in country the intelligence staff realized that out dated country data had been used to plan operations. The deficiencies were quickly addressed and there was no overall impact to the mission.

The lack of a centralized repository of current and verified political, military, economic, social, information, infrastructure, physical environment, and time resources and data that can be used at the tactical level presents challenging problems to the Intelligence staff when responding to the short time line typically associated with human assistance and disaster relief missions. The lack of a Regionally Aligned Forces relationship may have further complicated the task of intelligence preparation of the battlefield in such a short suspense timeline. Military intelligence staffs are typically focused on the traditional threat-force protection role rather than a human assistance and

disaster relief intelligence role. It may be especially challenging when the information gathering and analysis is for the analytical support of an epidemic response mission.

Military Intelligence LNOs assigned to the Liberian Ministry of Health and National Ebola Command Center were not specifically trained or educated to work with the analysis of epidemiologic information. The LNOs were tasked with compiling, reporting, and disseminating Ebola related information on a daily basis.[24] The LNOs were able to adapt and develop methods of data analysis that assisted the Liberian Ministry of Health with identifying trends, patterns, and problem areas requiring action. Specific humanitarian assistance and disaster relief education during officer development programs concerning intelligence preparation of the battlefield techniques and capabilities in quickly evolving actions that are not in conjunction with the Regionally Aligned Forces structure would be beneficial for staff officers. This education could provide more in-depth instruction on methods of information sharing with non-military operational partners to help bridge the intelligence gap.

The 101st Airborne Division command team leveraged Public Affairs Officers to keep the public, Soldier's families, stakeholders, and United Action partners informed. The high profile and public awareness of the dangers associated with responding to the Ebola crisis made it essential to prepare and disseminate accurate and timely information. Prior to the deployment, the command had town hall meetings for Soldier's families and the media. It was essential that families were aware of the risks associated with Soldiers deploying to contain the Ebola epidemic and then returning home upon mission completion. It was also important to convey the message that all steps would be taken to ensure the safety of US Service Members. Public Affairs Officers worked with LNOs,

partner organizations, the media, and local governments once deployed. An open dialogue with all parties involved increased confidence that the mission was necessary and would be conducted as safely as possible. The Public Affairs Officers efforts were also essential to project the message that the US Military was acting in a supportive role to USAID, which in turn was supporting the Liberian Government's efforts to contain the epidemic. In humanitarian assistance and disaster relief operations where the military is not the lead agency it is necessary emphasize the fact that the military is working in support of other relief organizations during the operation. Public Affairs Officers worked in conjunction with other governmental and NGOs to foster an atmosphere of cooperation and team work. The message that the US Military was acting in a supportive capacity built trust with the Liberian population. The Public Affairs Officers framed messages that supported "speaking with one voice" and stressed the US Military's supportive role in order to galvanize and synchronize efforts among mission partners as well as garner public support from home and abroad.[25]

Personnel

The 101st Airborne Division had initially estimated that 3500 personnel would be deployed for Operation United Assistance. By coordinating with the USARAF ASCC and the joint USAFRICOM they were able to right size the personnel requirements. The initial deployment program was decreased from 3500 to 1250.[26] Staffing for the tactical command post was increase from 50 to roughly 150 to 170 personnel to support the combined relief effort. However, there were personnel short-falls on the joint manning document. Once established, the JFC-UA noted that some personnel lacked the appropriate military occupational specialty or experience. Specifically, the mission

required fewer tactical elements and more public affairs, human resources, contracting, medical, legal, and civil affairs elements.[27] It should also be noted that readiness requirements for the area of responsibility complicated filling the approved joint manning document as some key individuals were not deployable to the region. The 101st Airborne Division's Soldier Readiness Processing was not aligned with the regional requirements; USAFRICOM and Central Command (CENTCOM) had different deployment criteria. Early planning efforts for personnel requirements and thorough critiques of the joint manning document are essential for human assistance and disaster relief missions.

A special emphasis for humanitarian assistance and disaster relief missions should be on the selection of personnel who have the skill set to serve as LNOs with partner organizations. Additionally, LNOs can work to leverage civil affairs personnel and assets to facilitate situational understanding, develop collaborative solutions, and achieve joint synchronization along lines of effort.[28] The JFC-UA joint manning document was primarily made up of 101st Airborne Division personnel. After collaboration and planning, the joint manning document was revised to include 24 additional LNOs to be sent to other United Assistance partners. LNOs were sent to USAFRICOM, USARAF, the US embassy, and the National Ebola Command Center as well as other major players on the United Assistance partner team. Temporary LNOs were also sent to work with the UN in Liberia. Embedding 11 personnel as LNOs in USARAF from the 101st Airborne Division within 10 days of mission notification facilitated initial planning processes. Five of these LNOs proceeded to Liberia to coordinate country clearance and secure a site for the command post through the US Embassy in Liberia. On October 25, 2015 the JFC-UA was established with no more than 20 personnel from the 101st Airborne Division in

country.[29] In turn, once the JFC-UA was actively established, it received LNOs from 12 other United Assistance Partner organizations.[30] LNOs facilitated communication between operational partners, which in turn led to the coordination of capabilities. Through coordination of capabilities, operational partners were able exercise collaboration of operational ideas and concepts. Through the processes of coordination and collaboration, synchronization of effort was achieved. The combined effort leading to mission success was to great extent achieved through the implementation of LNOs. Adaptable and flexible LNOs along with the efforts of the civil affairs team proved to be critical operational multipliers in understanding the functions and capabilities of other partner organizations. LNOs along with supporting civil affairs assets were key factors in facilitating successful team work along synergistic lines of effort with partner organizations throughout Operation United Assistance.

The command team realized that early entry teams must deploy rapidly to establish on the ground collaboration with United Assistance partners, the Government of Liberia, and other stakeholder organizations. This was essential to establish logistics, transportation, communication, management of the operational area, and security. Additionally, deploying civil affairs assets early in the deployment sequence can enhance situational awareness by promoting communications with mission partner, host nation civil, governmental, and military organizations and agencies; providing more detailed assessments of the operational environment; facilitating the creation of more accurate operational running estimates; locating lodgment and facilities; and enhancing informational capabilities with the populace.[31] These concerns highlight the importance of coordinated forward planning from a personnel perspective. Coordinated efforts were

also established with contracting personnel; logistics personnel (G-4); the Defense Logistics Agency support personnel; port operations from the US Transportation Command's Surface Deployment and Distribution Command; engineer personnel for infrastructure analysis and development; financial personnel (G-8) for funding to acquire human assistance and disaster relief equipment and personnel requirements; information and communications (G-6) personnel to assist with world-wide communications that can be integrated with relief assistance partners; and relief assistance partner LNOs to ensure adequate personnel requirements are established.[32] The division transportation office actively engaged with the Surface Deployment and Distribution Command which in turn greatly enhanced the division's movement as the operation progressed.[33] Forward planning as well as critical and creative thinking is necessary when preparing for personnel requirements and movement coordination before deployment of forcers for a human assistance and disaster relief mission.

Joint manning procedures initially complicated the arrival of forces as envisioned by the 101st Airborne Division command team tasked to set up the Joint Forces Command. Personnel accountability teams, a mail services team, and a mortuary affairs team were initially planned as part of the early entry team. However, the lines of effort and force structure planning established by USAFRICOM and USARAF were different than those established by the 101st Airborne Division. The personnel accountability, mail, and mortuary teams did not arrive in country until much later than anticipated. This caused problems for personnel accountability as the Transfer Protocol System used for personnel accountability did not arrive until the personnel accountability teams arrived. Daily personnel accountability for 2,700 personnel was accomplished by the cumbersome

use of manual spreadsheets distributed throughout the force. To complicate the matter, the joint manning document template used for planning at the division level was different than the joint manning document template used by joint task force planners.[34] An understanding of the joint manning document and synchronization of personnel requirements with deployment time lines should be coordinated between deploying units, the ASCC staff, and the joint planning staff.

The complexity of a joint operation in support of a multi-organizational, multi-national relief effort created personnel and talent management challenges. The Ebola virus disease was recognized as the primary threat. The new situational understanding gained once in the area of operations allowed the JFC-UA command team to shift personnel assets to better address the threat. Analysts were allocated to the National Ebola Command Center where they created operational products and assessments used by the Government of Liberia and USG agencies to keep partner organizations informed. The JFC-UA increased the future operations and planning cell to better prepare for near term operational concepts, force flow, and requests for forces. The future operations and planning cell routinely interacted with the XVIII Airborne Corps, US Army Forces Command, the Joint Staff, USAFIRCOM, USARAF, and the Government of Liberia. The logistics cell also interacted with many of these organizations to facilitate force flow in the area of operations. The nature of joint operations in an evolving humanitarian and disaster relief environment required flexible staff members and personnel management processes that could quickly adapt to emerging requirements and work with mission partners in a collaborative manner.[35]

Facilities

The Government of Liberia did not have an established national level civil-military or humanitarian operations center. A three story building with adequate space was identified by the Government of Liberia in the capitol city of Monrovia; however, it required minor renovations and upgrades to ensure that it was capable of serving as a national level operations center. The National Ebola Command Center was established in the converted three-story building once the necessary renovations were complete and it became the Liberian government's crisis response hub for information analysis and distribution to relief effort partners and stake holders.

The National Ebola Command Center evolved to serve as the operation center for the collaborative relief effort. It was a location from which the Government of Liberia's leadership and capabilities could be incorporated into the collective effort. It facilitated the sharing of information between United Assistance partners and the Government of Liberia.[36] The Ministry of Health performed lead organization administrative activities from the National Ebola Command Center and created rapid response teams to isolate Ebola virus disease outbreaks. The joint forces intelligence analyst embedded at the National Ebola Command Center worked with the leaders of 120 multinational organizations from Europe, Asia, and Africa in order to disseminate guidance on international crisis priorities. These priorities were then integrated into an operational model that nested with the Liberian Government's overall strategy on isolating and defeating the Ebola virus disease.[37] The establishment of the National Ebola Command Center provided a command and control operations center from which the Liberian

Ministry of Health could coordinate meetings with United Assistance partners and disseminate information through daily briefings and reports along multiple lines of effort.

The 101st Airborne Division headquarters was established at the Barkley Training Center which was also the main command location of the Liberian Army. The location provided limited infrastructure, security as a walled compound, and buildings which required minor repair. The location provided better facilities than the austere environment for which the division had planned on setting up their command post. The location was improved so that it could serve as the Joint Operations Center. After the JFC-UA was established it reported directly to USAFRICOM. The Joint Operations Center consisted of communications, intelligence, operations, and logistics cells which performed mission command functions as well as establishing and maintaining coordination and collaboration with partner organizations.

The USARAF mission team conducted its operations from a hotel in Monrovia nearer to the National Ebola Command Center. USARAF coordinated with the Defense Logistics Agency, organized the mission tasking matrix for health care equipment, established the Monrovian Medical Unit, and coordinated for the location and size of the Ebola treatment units. Once the 101st Airborne Division redeployed USARAF also was responsible for the health monitoring requirements of returning Soldiers as well as ensuring adequate mission transition to follow-on partner organizations. Having a USARAF contingency on the ground in the area of operations enhanced the JFC-UA staff's effectiveness.

Coordinating with NGOs to support sustainment requirements was beneficial. The 101st Airborne Division lacked the full support of a designated TSC or ESC during the

operation. The division was able to coordinate with the World Food Program in order to use their forward logistical bases and portions of their logistics chain for support in remote areas throughout the operation. The collaborative effort decreased movement on the poorly maintained Liberian road system. It also decreased the burden of manning and protecting forward supply and distribution points.[38] Sharing forward logistical bases and combining operational assets to increase mission capabilities demonstrated how a cohesive and effective team can be built from a group of individual and very different organizations who are committed to a successful partnership in a joint humanitarian assistance or disaster relief operation.

Conclusions

The mission of the 101st Airborne Division was to bring speed and flexibility in filling the capabilities essential to contain Ebola, and transition these capabilities to the Government of Liberia in order to eradicate Ebola with progressively less support from outside agencies.[39] The US Army demonstrated its capacity and commitment to respond to a global threat rapidly, work within a joint interagency structure successfully, and provide capabilities for sustained humanitarian assistance and disaster relief operations.

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[1] Center for Army Lessons Learned, "Initial Impressions Report–101st Airborne Division (Air Assault) United Assistance," 3.

[2] Ibid., 1-57.

[3] Army Capabilities Integration Center (ARCIC), "What is DOTMLPF?" accessed April 7, 2016, http://www.arcic.army.mil/AboutARCIC/dotmlpf.aspx.

[4] Center for Army Lessons Learned, "Initial Impressions Report–101st Airborne Division (Air Assault) United Assistance, 5.

[5] Ibid., 7.

[6] Ibid.

[7] Ibid., 40-41.

[8] Ibid., 9.

[9] Department of Defense, Joint Publication 3-0, *Joint Operations* (Washington, DC: Department of Defense, 2011), V-20.

[10] Ibid., Appendix A-2.

[11] Center for Army Lessons Learned, "Initial Impressions Report–101st Airborne Division (Air Assault) United Assistance," 9.

[12] Ibid., 38.

[13] Ibid., 13.

[14] Ibid., 14.

[15] Ibid., 50-51.

[16] Ibid., 34-35.

[17] Ibid., 7.

[18] Ibid., 23.

[19] Ibid., 9.

[20] Ibid., 52.

[21] Ibid., 9.

[22] Ibid., 28.

[23] Ibid., 30-31.

[24] Ibid., 22.

[25] Ibid., 45-46.

[26] Ibid., 33.

[27] Ibid., 11.

[28] Ibid., 39.

[29] Ibid., 27.

[30] Ibid., 13.

[31] Ibid., 43.

[32] Ibid., 11.

[33] Ibid., 33.

[34] Ibid., 17-18.

[35] Ibid., 13.

[36] Ibid., 9.

[37] Ibid., 23.

[38] Ibid., 42.

[39] Ibid., 3.

CHAPTER 5

RECOMMENDATIONS AND CONCLUSION

Introduction

The 101st Airborne Division established the JFC-UA framework to conduct humanitarian and disaster relief operations for five months in support of USAID's mission to prevent the spread of the Ebola virus disease. The CALL initial impressions report provides a summary of lessons learned during the operation. Analyzing the information gathered from JFC-UA staff officers provides information that will be useful in future humanitarian assistance and disaster relief operations.

Assertions and Conclusions

Seven key themes can be identified as a result of the interviews that were conducted once the 101st Airborne Division redeployed. First, due to the dynamic organizational structure of the relief effort it was important to know and understand how the chain of command worked with the other relief effort organizations. Second, it was important that a strategic link be maintained with military organizations outside the theater in order to remain focused on strategic objectives. Third, it was important that all the operational partners communicated with one voice to synchronize operations and relief efforts. Fourth, it is necessary to nest lines of effort in a way that supports the host nation's objectives. Fifth, military organizations provide expertise that can significantly enhance the relief efforts of other partner organizations. Sixth, a shared understanding must be established through combined meetings, working groups, LNOs, and the use of an unclassified information network. And finally, it is important that leaders and Soldiers

understand and verify the specific readiness requirements for the geographic region they are deploying to.

Recommendations

Army Doctrine does not clearly define the relationship and role of Army units that fall under another federal agency while operating on foreign soil. Doctrine for Defense Support of Civil Authorities clearly defines this relationship when military units are used in domestic humanitarian assistance, disaster relief, or civil security related matters. The use of US Military forces in support of another federal agency on foreign soil can make lines of effort or the structure command confusing for military units who fall under the umbrella of another agency while conducting humanitarian assistance or disaster relief missions. The Joint publications provide more detailed guidance as to how the US Military works in tandem with other agencies or organizations. During the 2014 Ebola epidemic response the 101st Airborne Division was tasked to establish a joint command in support of USAID which in turn supported the government of Liberia's response to the Ebola crisis. This organizational construct worked well from a joint perspective. However, during my research I noted that joint doctrine was much more useful than referencing Army doctrine alone. That being said, it may be a mute point to revise Army doctrine to more clearly define the use of Army units in support of another agency on foreign soil. In today's military environment, it is very unlikely that the Army would deploy in support of a humanitarian assistance or disaster relief operation without being aligned in a joint force of some sort.

The Regionally Aligned Forces doctrine was not used during the United Assistance operation. The 101st Airborne Division is regionally aligned with

CENTCOM, not (Forces Africa Command) AFRICOM. The 1st Infantry Division is regionally aligned under AFRICOM. The researcher could not find any reference as to why a unit regionally aligned with CENTCOM was deployed in support of an AFRICOM mission. It is feasible that since the 101st Airborne Division was already preparing for a decisive action rotation their readiness state was a better match for the quick response needed for the Ebola crisis in West Africa. However, deploying units that are not regionally aligned with the joint forces regional command introduced a greater potential for disconnect between the joint command and the deploying unit that is not regionally aligned.

An example of a potential disconnect between the Combatant Command and a non-regionally aligned unit is the differences in the Soldier readiness program associated with each region. The 101st Airborne followed the CENTCOM readiness standards; however, the readiness standards were different for AFRICOM. In some cases, this created a misunderstanding between who the division was planning on deploying and who actually was deployable to Africa. Some individuals who played important roles in the division were not able to deploy. For example, the 101st Airborne Division had planned for their senior operations office (G-3) to deploy with the division. When it was determined that the division had used a different readiness standard than AFRICOM's and the standards were incorporated the senior operations officer was non-deployable to Africa. A more junior operations officer was tasked with acting as the division's senior operations officer. In reality, this had little effect on the mission as the operations cell was able to function without their senior operations officer. But the issue does bring to

light one concern about deploying units that are not regionally aligned with the Combatant Command area to which they are deploying.

Another problem between AFRICOM and the 101st Airborne Division was the joint manning document. The 101st Airborne Division was using the joint manning document template that they had used previously under CENTCOM. AFRICOM was using a different joint manning document template. This created confusion between the deploying units and AFRICOM. This resulted in the personnel accountability team, the mail team, and the mortuary team to arrive in Liberia much later than the 101st Airborne Division had planned on. Fortunately there was not a big demand for the mortuary team before they arrived. The 101st Airborne Division was able to work with USARAF to establish an ad-hoc mail team when they arrived in Liberia. The late arrival of the personnel accountability team cause and excessive amount of work and exposed the personnel accounting capabilities to error. To address the personnel accountability short-fall, the 101st Airborne Division command team implemented the use of spreadsheets that were distributed to all the units. The spread sheets were updated daily for personnel accountability and then forwarded to the command post where they were compiled. This is an adequate method, but it was labor intensive. Additionally, revising and compiling the daily accountability spreadsheets for 2700 service members introduced a higher probability for error. One the personnel accountability team arrived the problem was solved. The joint manning document confusion which resulted in personnel deploying later than anticipated created unnecessary work and risk.

A solution to the Soldier readiness issue and the joint manning document confusion may have been avoided if AFRICOM or USARAF had sent LNOs or an

assistance team to the 101st Airborne Division. The division did send LNOs to USARAF to coordinate planning for the deployment. The mutual exchange of LNOs may have negated the readiness and joint manning document confusion. An assistance team or LNO from AFRICOM or USARAF may have realized that the 101st Airborne Division was following the CENTCOM readiness standards and that is was different than the AFRICOM readiness standards. The LNO or assistance team may have also realized that the 101st Airborne Division was using a different joint manning document template than the one AFRICOM was using. On the ground coordination by a LNO or assistance team may have averted the readiness and joint manning document problems.

The use of non-regionally aligned forces may have made intelligence gathering for the 101st Airborne Division more difficult. The 101st Airborne Division's intelligence section had difficulty gaining accurate and current data on Liberia. The division was aligned with CENTCOM and was prepared to conduct decisive action operations in that region. The institutional knowledge and intelligence gained by previous deployments to Iraq and Afghanistan were not truly applicable to West Africa. USARAF did supply contact information to the division intelligence section and the section was able to establish contact with the US Embassy in Liberia to gain information. The lack of accurate and current information hampered the intelligence section's efforts to conduct a complete and thorough "initial preparation of the battlefield." One example is the lack of information that the water purification units would have a difficult time finding an adequate water source or that the water sources identified would prove to be such poor quality that extensive testing was required. The fact that the water purification sections were unable to complete pre-deployment training in the US due to environmental

limitations complicated the issue. Another example is the lack of information of the substandard fuel or the dangerous driving conditions in Liberia. Fortunately, the acquisition of contracted transportation assets and the partnership with other relief organizations in the distribution of supplies helped to remediate the transportation problem. It is my opinion that the division's intelligence section was prepared for conducting intelligence with in the area that they were regionally aligned (CENTCOM), but not as prepared to gather information in areas that they were not aligned with or had little institutional knowledge or experience in. A regionally aligned force that has an established rapport with AFRICOM and was accustomed to assessing information in Africa may not have been as challenged in gathering information.

The JFC-UA did not establish a CMOC. This is contrary to current joint doctrine. Instead, the command team chose to adapt to the current processes established in the National Ebola Command Center structure and use its capacity as a surrogate CMOC. In my opinion, this deviation from doctrine was the correct call. This facilitated collaboration between all the United Assistance partners and allowed for one central location to coordinate efforts from. The deviation from doctrine demonstrated a flexible approach to the concept of a joint CMOC and its role in supporting other organizations. Using the Liberian government's National Ebola Command Center in a CMOC capacity was extremely beneficial for all parties concerned. Doctrine provides guidance on how we operate. In my research, I did not find any reference to a similar situation. But it makes sense, especially in a humanitarian assistance and disaster relief scenario. One recommendation is to address in doctrine how a joint forces commander may incorporate the concept of "piggy-backing" CMOC activities with the command and control

capabilities of partner organizations that may already exist in a humanitarian assistance or disaster relief operation.

The USARAF has limited capabilities for an area of responsibility that is roughly three times the size of the continental US. USARAF does not have an organic TSC or ESC to support units deploying to Africa. The 21st TSC in Europe has a secondary mission to support TSC activities for USARAF, but its primary mission is supporting the European theater. A TSC or ESC aligned under USARAF would increase capabilities and create an established role is maintaining information regarding sustainment concerns in Africa. With the growing unrest and security concerns in Africa it may be prudent for USARAF to have its own TSC or ESC. It is unpredictable to determine where the next humanitarian assistance or disaster relief mission may occur. A crisis requiring a quick response could happen anywhere in the world, or at any time. Army sustainment capabilities that are aligned under USARAF would also be beneficial for AFRICOM as it plans and executes joint missions in their area of responsibility. With the growing population, security concerns, and geo-political importance of Africa, USARAF should have designated sustainment capabilities that can be devoted to missions in Africa.

The US Military should incorporate humanitarian assistance and disaster relief related tasks into unit level training. Force movement exercises should include the concept of deploying the full unit modified table of organization and equipment. It is unlikely that units will fall in on prepositioned equipment and supplies during a humanitarian assistance or disaster relief mission. Sustainment and transportation officers should be familiar with strategic movement assets and procedures. As demonstrated in United Assistance, sustainment brigade staff may have to coordinate movement and

perform roles well above the brigade and division level. ASCCs that do not have a designated TSC or ESC should be aware that lower echelon sustainment units may need additional assistance and guidance when they are required to function at a capacity well above their normal roles. Training and assistance in the Transportation Coordinator's Automated Information for Movement System may be a necessary requirement for military organizations deploying for humanitarian assistance and disaster relief missions. Training planners should seek opportunities to incorporate joint training with other services as well as non-military organizations. The Joint Operation Planning and Execution System should be included in unit training exercises; when the Army deploys it will most assuredly be in a joint capacity. Training opportunities exist by inviting other agencies or organizations to joint training events, the National Training Center, and other combined arms training exercises. Planners can incorporate disaster preparedness exercises with civil organizations in the US as a possible avenue to train for humanitarian assistance and disaster relief on foreign soil. Exchange programs between different agencies and organizations could set the tone for future success for humanitarian assistance and disaster relief operations. Training with other agencies and aid organizations will improve response capabilities. These training opportunities can build rapport between military units, government agencies, and civil aid organizations. Joint training for humanitarian assistance and disaster relief should be coordinated between North Atlantic Treaty Organization, regional, and UN partners. The use of APAN should be incorporated into training to ensure familiarity and joint military-civil exercises can re-enforce training in order to capitalize on APAN's unique capabilities. The US Military

plays an important role in humanitarian assistance and disaster relief missions and we should train for them.

Humanitarian assistance and disaster relief training should be integrated into Theater Security Cooperation and Building Partner Capacity missions in order to improve the emergency response systems of partner nations. Foreign security assistance missions should incorporate disaster preparedness. Military planners can assist under developed countries or partner nations with developing their own national emergency preparedness programs. At the onset of the 2104 Ebola crisis, the Liberian government did not have an established emergency response system or protocol. The Liberian and US Military have had a long standing security assistance program that focused on security force training and combating terrorism. Assistance programs such as this could be leveraged with support from the DOS to help build the partner nation's capacity to design their own emergency response system. Helping partner nations establish their own emergency response capabilities may avoid the necessity of an international aid response.

Areas for Further Study

The lessons learned from the 2014 Ebola epidemic and Operation United Assistance should be integrated into a comprehensive strategy to meet the challenges of future humanitarian crises and disasters. It is important that joint, interagency, intergovernmental, and multinational (JIIM) organizations use the lessons learned in order to further develop a synchronized humanitarian assistance and disaster relief strategy. The growing complexity of humanitarian assistance and disaster relief efforts require shaping operations by JIIM organizations in order to better meet shared goals once a crisis occurs. Establishing a comprehensive JIIM strategy that is supported by

doctrine will help improve the current state of how relief efforts are designed and implemented. The strategy design should delineate key authorities with associated objectives at the national, theater, operational, and tactical levels. Linking a comprehensive JIIM strategy with operational design for humanitarian assistance and disaster relief missions will better synchronize humanitarian efforts. A comprehensive USG JIIM strategy supported by each organization's doctrine will better optimize the US Military's efforts in future humanitarian operations.

Summary

Reframing the insights, lessons, and best practices identified in the CALL Initial Impressions Report "101st Airborne Division (Air Assault) United Assistance" creates a better understanding of the operational dynamics that may be associated with joint humanitarian assistance and disaster relief operations. The analysis and categorization into DOTMLPF themes provides insight as to how problems in different operational lanes relate to one another. Correlation of information in the DOTMLPF domains can be used to identify capability gaps, formulate solutions, and determine if a solution in one operational lane may be leveraged with a solution in another operational lane. Every humanitarian assistance or disaster relief mission is uniquely different; however, lessons learned from one mission can lead to improvements to processes and capabilities that increase the effectiveness of the next humanitarian assistance or disaster relief mission.

The 2014 Ebola epidemic in West Africa demonstrated the US's commitment to humanitarian assistance and disaster relief. US Military forces can expect to continue a combined and comprehensive approach to crisis situations around the world. A unifying approach through and leadership lines of effort is required to bring together JIIM to

achieve a desired end state for humanitarian assistance and disaster relief operations. This requires flexible, timely, trained, and interoperable capabilities that can delivered in response to a crisis through a concerted effort by the US Military, partner agencies, NGOs, and host nation governments. Humanitarian assistance and disaster relief missions will continue to increase the demands on the US Military and it is important that we learn from past experiences to determine more effective ways to prepare for future humanitarian crises.

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